

ABSTRACT

A nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and
5 external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV containing at least one metal chalcogenide, wherein said nano-porous metal oxide further contains a triazole or diazole compound; and a process for in-situ spectral sensitization of nano-porous metal oxide semiconductor with a band-gap of greater
10 than 2.9 eV on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV, containing at least one metal chalcogenide, comprising a metal chalcogenide-forming cycle comprising the steps of: contacting the nano-porous metal oxide with a solution of metal ions; and
15 contacting the nano-porous metal oxide with a solution of chalcogenide ions, wherein said solution of metal ions and/or said solution of chalcogenide ions contains a triazole or diazole compound.